

SOV/100/58-9-4/13

Mechanisation of Excavation Works in Stroymekhanizatsiya Trust of Glavkiyevstroy.

Fig.3). Two methods are used by the Stroymekhanizatsiya Trust for the loosening of frozen ground: mechanical method (Fig.5) and heating method (Fig.4). Fig.5 illustrates a wedged-shaped ramming implement for the mechanical loosening of frozen ground designed by Eng. Sheptenko. Fig.6: diagram giving details of the increased output of excavators.

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|--|-----------------------------------|
| 1. Earth moving equipment--Maintenance | 2. Earth moving equipment |
| --Performance | 3. Earth moving equipment--Design |
| --USSR | 4. Construction |

Card 2/2

ZAYKOVSKAYA, N. E.

"Reduction Division in Interspecific Hybrids in the Genus *Betula* L:

II. Cytological Evidence on the Question on Experimental Synthesis of the

Species *Betula trigyna* W. Et K. (2n=54)," Dok. AN, 23, No. 9, 1939.

Mem., Cytological Lab., All-Union Res. Inst. Sugar Industry, Kiev, -c1939-.

1. ZAYKOVSKAYA, N. Ye.

2. USSR (600)

4. Beets and Beet Sugar

7. Somatic fertilization of sugar beet. Izv. AN SSSR. Ser. biol. no. 4, 1952

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

FD 282

ZAYKOVSKAYA, N. E.
USSR/Agriculture - Biology

Card 1/1

Author : Zaykovskaya, N. E.

Title : Some peculiarities of flowering and fertilization of beets

Periodical : Izv. AN SSSR. Ser. biol. 3, 79-86, May/June 1954

Abstract : Since fertilization takes place faster in cases of cross-pollination than when self-pollination takes place, the decisive moment is not the time the pollen lodges on the stigmatic part of the pistil, but the speed with which it interacts with the female tissues. Preliminary experimental data indicates that pollen, deposited into the embryo sac after the ovule become fertilized and already began to develop, transmit their characteristics to succeeding generations. Such transmission is accompanied evidently by fertilization of somatic cells of the nucellus by these supplementary pollen and their subsequent interaction with the already fertilized ovule on the basis of mutual assimilation. Fertilization of the ovicell, central cell, and the somatic cells of the nucellus cannot be considered equivalent. To clarify the significance of each one of these phases of fertilization further research is necessary. Illustrations. Twenty-seven references, all USSR.

Institution : Experimental Base, All-Union Scientific-Research Sugar Beet Institute, Uman'.

Submitted : September 27, 1953

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Pub. 22 - 44, 49

Zarkovskaya, N. E.

Variability in the pollination and fertilization of sugar beets in relation to the external conditions

Doc. AN SSSR 102/1, 177-179, May 1, 1955

Physiological changes occurring during the pollination and fertilization of sugar beets under various external conditions are discussed.

Institution

February 10, 1955

Presented by

ZAYKOVSKAYA, N.E.

Somatic fertilization. Ukr. bot. zhur. 13 no.3:92-99 '56 (MIR/ 9:11)

1. Umans'kiy doslidno-selektsiyniy punkt Sortonasinnewogo upravleniya
po tsukrovomu buryaku.
(Fertilization of plants)

ZAYKOVSKAYA, N.E.

Influence of secondary pollination on the progeny of beet. Dokl. AN
SSSR 109 no.3:627-629 J1 '56. (MIRA 9:10)

1. Predstavleno akademikem A.L. Kursanovym.
(Beets) (Fertilization of plants)

ZAIKOVSKAYA, N.E.

USSR/Cultivated Plants - Technical. Oleaginous, Sugar-Bearing. L-5

Abs Jour : Ref Zhur - Biologiya, No 16, 25 Aug 1957, 69320

Author : Zaikovskaya, N.E.

Inst :

Title : The Effect of Pollen of the Secondary Pollination on
Beet Generations.

Orig Pub : Dokl. AN SSSR, 1956, 109, No 3, 627-629

Abst : Experiments are described on verification of the influence
on the developing young organism of pollen which settles
on the stigma after fecundation of the reproductive cells.
In the first variant of the experiment the flowers were
pollinated by a mixture of sugar-beets and table beets,
taken in equal quantities; in all the following variants
the first pollination was made only by pollen of sugar
beets, but the pollen of table beets was applied thus:
in the second variant after 8 hours, and in the 3rd after
24 hours, in the 4th after 48 hours, and in the 5th after

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USSR/Cultivated Plants - Technical. Oleaginous. Sugar-Bearing. L-5

Abs Jour : Ref Zhur - Biologiya, No 16, 25 Aug 1957, 69320

72 hours. The seeds were collected separately in accordance with the experimental variant and in the spring of the following year they were sown in divided seedrows; the seeds of the same plants which bloomed naturally served as a control. In cultivation the sprouts were analyzed and, on digging, the grown plant was analyzed. The conclusion was that in beet flowers pollen which fell on the stigma on the 2nd or 3rd day of flowering takes part in formation of hereditary properties of succeeding generations, despite the fact that the pollen penetrates into the seed bud after germination and the beginning of development of zygote and endosperm. In view of participation of pollen in the process of fecundation, having fallen on the stigma on the 2nd or 3rd day of flowering, the presence of proterandry should be acknowledged in the beet.

Card 2/2

ZAYKOVSKAYA, N.E.

Sterility of sugar beet pollen. Agrobiologiya no.5:778-780 3-0
'60. (MIRA 13:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sakharnoy svekly,
g. Kiev. (Sugar beets) (Pollen)

ZAYKOVSKAYA, N.E.; PETRUSHINA, M.P.

Method for a rapid chromosome count. Agrobiologia no.4:630-
632 JI-Ag '61. (MIRA 14:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sakharnoy
svekly, Kiyev, (Sugar beets) (Chromosomes)

ZAYKOVSKAYA, N.E., kand.biolog.nauk

Amitotic cell division in sugar beets. Agrobiologiya no. 3:
459-461 My-Je '64. (MIRA 17:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sakharnoy
svекly, Kiyev.

ZAYKOVSKAYA, N.E. [Zaikova'ska, N.E.]

Cytoplasmic male sterility in sugar beets. Ukr. bot. zhur. 20
no. 5:20-32 '63. (MIRA 17:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sakharney
svekly, laboratoriya tsitologii i genetiki.

ZAYKOVSKAYA, N.E.

Effect of alcaloids on meiosis and fertilization of the ovule
of sugar beets and the effectiveness of such actions in pro-
ducing polyploids. Zhur. ob. biol. 24, no.1:74-79 Ja-F'63
(MIRA 16:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sakharney
svekly, Kiyev.

*

GEL'PERIN, N.I., doktor tekhn.nauk, prof.; AYNSTEYN, V.G., kand.tekhn.nauk;
ZAYKOVSKIY, A.V.

Apparatus with a fluidized (boiling) bed of free-flowing material
in a field of centrifugal forces. Khim. mash. no. 3:2-4 My-Je '60.
(MIRA 14:5)
(Fluidization)

ZAYKOVSKIY N.M.

ZAYKOVSKIY, N.M., inzh. (Leningrad)

Selection of methods and machines for trenchless pipe laying.
Stroi.prom.neft.prom. 2 no.7:5-8 J1 '57. (MIRA 10:10)
(Pipelines)

ZAYKOVSKIY, B.

New equipment for washing automobiles. Avt.transp.34 no.5:15-18
My '56. (Automobiles--Maintenance) (MLBA 9:9)

SOV/19-58-6-657/685

AUTHORS: Gridunov, A.S., Zaykovskiy, B.S., Karelin, A.K.,
Sergeyev, P.A., and Prokhorov, V.A.

TITLE: An Electromagnetic Vibration Drive (Elektromagnit-
nyy vibratsionnyy privod)

PERIODICAL: Byulleten' izobreteniy, 1958, Nr 6, p 146 (USSR)

ABSTRACT: Class 81e, 52. Nr 113681 (587440 of 9 Dec 1957).
Submitted to the Committee for Inventions and Dis-
coveries at the Ministers Council of USSR. A vibra-
tion drive attached at an angle to a conveyer chute
and bearing additional weights for obtaining re-
sonance. To prevent detrimental vibration in the
conveyer, the electromagnetic vibrator is designed
in the form of a yoke on columns, with two electro-
magnetic cores placed symmetrically on both sides
and fastened rigidly to casings on springs support-
ed by the yoke plate.

Card 1/1

LAJKOVSKIY, F. V.

Arsenic

Some problems in the determination of arsenic in organic matter. Apt. delo No. 4, 1952.

Monthly List of Russian Accessions, Library of Congress. November, 1952. UNCLASSIFIED.

1. ZAYKOVSKIY, F. V.

2. USSR (600)

4. Mercury

7. Problem of loss of mercury in general forensic chemical analysis. Apt. delo.
No. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

Card : 1/1

Authors : Zaykovskiy, F. V.

reaction of amalgamated zinc with concentrated HCl, are explained.
Seven references: 5-USSR and 2 English. Tables; drawing.

Institution : All-Union Institute of Mineral Raw Materials, Moscow

"APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R001964030008-0

APPROVED FOR RELEASE: 03/15/2001

CIA-RDP86-00513R001964030008-0"

ZAYKOVSKIY, F. B.

USSR/Analytical Chemistry - Analysis of Inorganic Substances; G-2

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 1229

Author: Zaykovskiy, F. B.

Institution: None A-U INST. MINERAL RAW MATERIALS

Title: Extractive Separation of Niobium, Tantalum, and Titanium

Original
Periodical: Zh. analit. khimii, 1956, Vol 11, No 3, 269-277 (with a summary in English)

Abstract: A new method has been developed for the separation of Nb, Ta, and Ti, based on the varying extract ability of the pyrocatechinates of these elements in oxalic acid solution. At pH 3 $n\text{-C}_4\text{H}_9\text{OH}$ in the presence of excess pyrocatechin extracts the pyrocatechinates of Ta and Ti. Under such conditions the Nb-complex is retained in the aqueous phase. The Ti is separated from the extract by a second extraction, using 5% H_2SO_4 . For the complete separation of Ta from Ti the operation must be repeated. The pyrocatechinates of other elements (Fe, Zr, Sn, and Mo) are not extracted under the conditions described. The method is

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USSR/Analytical Chemistry - Analysis of Inorganic Substances, G-2

Abst Journal: Referat Zhur - Khimiya, No 1, 1957, 1229

Abstract: applicable to the separation of microquantities of Nb and Ca. The error is ~10%.

Card 2/2

75-13-3-2/27

AUTHORS: Zaykovskiy, F. V., Gerkhardt, L. I.

TITLE: The Photometric Determination of Thorium by Arsenazo in the Presence of Zirconium, Titanium and Rare Earths (Fotometri.. cheskoye opredeleniye toriya s arsenazo v prisutstvi tsirkoniya, titana i redkozemel'nykh elementov)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 3, pp 274-279 (USSR)

ABSTRACT: The photometric determination of thorium by arsenazo (Ref 1) possesses a higher sensitivity than the determinations of thorium by other azo dyes (Refs 2 - 7). But zirconium, titanium, rare earths, further sulfate, fluoride and phosphate ions, as well as oxidizing agents and other compounds disturb the determination of thorium by arsenazo. In the present work the author sought conditions to remove the disturbing influence of zirconium, titanium and rare earths. Experiments showed that the violet-colored solutions of the thorium complex with arsenazo possess the highest optical density at pH-values of 1,3 - 3,0, whereas the optimum coloring of the

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75-13-3-2/27

The Photometric Determination of Thorium by Arsenazo in the Presence of Zirconium, Titanium and Rare Earths

complex forms at concentrations of the reagent of 1 - 1,5 mg in 25 ml solution. Based on the fact that zirconium is more strongly inclined to complex formation than thorium, compounds were sought which complexly bind zirconium without reacting with thorium. It became evident that tartaric acid removes the disturbing influence of zirconium in the photometric determination of thorium with arsenazo. Thus even an amount of 700 γ zirconium does not disturb the determination of thorium in the presence of 50 mg tartaric acid in 25 ml solution. In the presence of still more tartaric acid (75 - 100 mg) the optical density of the solution of the thorium complex considerably decreases, which makes the determination difficult. In amounts up to 120 γ in 25 ml solution titanium exerts no influence upon the optical density of the thorium complex. In the presence of 50 mg tartaric acid, 150 γ titanium in 25 ml solution are not disturbing either. Ascorbic acid can also be used for masking titanium. Hydrogen peroxide masks titanium but reduces the optical density of the solution of the thorium complex with arsenazo. At a pH of 1,3 up to a 95-fold excess rare earths do not disturb the thorium determination. Before the photometric

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evaluation, thorium must be reduced to the trivalent stage which is attained by ascorbic acid in a weakly acid solution. When using 50 mg tartaric acid and 10 mg ascorbic acid in 25 ml solution for the masking of rare earths, thorium can practically be determined in the presence of any amounts of rare earths, as even a 900-fold excess of the latter as compared to thorium does not influence its determination. A working prescription for the determination of thorium in the presence of zirconium, titanium and rare earths was worked out which, like all performed investigations, is exactly described. There are 4 figures, 5 tables, and 10 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy institut mineral'nogo syr'ya, Moskva
(Moscow, All-Union Institute of Mineral Raw Materials)

SUBMITTED: February 9, 1957

Card 3/3 1. Thorium---Determination

AUTHORS: Zaykovskiy, F. V., Gerkhardt, L. I. SOV/75-13-5-2/24

TITLE: Separation of Thorium From Titanium, Zirconium, and Other Accompanying Elements by Homogeneous Precipitation (Otdeleniye toriya ot titana, tsirkoniya i drugikh soputstvuyushchikh elementov metodom gomogennogo osazhdeniya)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 5, pp 513-518 (USSR)

ABSTRACT: The method of "homogeneous precipitation", which A. P. Terent'yev and his collaborators (Ref 18) also call the "method of creating reagents" and which other authors refer to (Ref 19) as "indirect precipitation", is much used in analytical chemistry for the determination of a number of metals (Refs 1-17). In these cases, the reagents are not ionized compounds, which form ion precipitants by hydrolysis, dissociation or disintegration of complex organic molecules into less complex substances. Only a few of the large number of organic compounds which in solution can form ion precipitants are presently used (Refs 10,20,21). For the quantitative determination of thorium it is necessary to obtain a coarse crystalline precipitate, which may be achieved in the method of homogeneous precipitation. For this end,

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SOV/75-13-5-2/24
Separation of Thorium From Titanium, Zirconium, and Other Accompanying Elements by Homogeneous Precipitation

the authors of the paper under review used acetonedioxalic acid as reagent (Ref 23). This compound in aqueous solution forms a precipitant for thorium - the oxalate ion. In an aqueous acetone solution the degree of co-precipitation of accompanying elements is lower (Refs 18,24). A large surplus of reagent should be added as this reduces both the co-precipitation of zirconium and titanium (Ref 22) and the solubility of thorium oxalate (Ref 25). The result of the experiments was that there is a quantitative precipitation of thorium as oxalate in a homogeneous solution at pH 0,6-1,5. In case of a higher pH-value the precipitation is incomplete. If there are calcium ions as co-precipitants, there is a quantitative precipitation of thorium still at pH 2,62. A microcrystalloscopic comparison between the thorium oxalate, which was thus obtained, and the thorium oxalate, that was obtained in a regular precipitation of thorium with oxalic acid, showed that in the homogeneous precipitation the crystals coalesce into bigger crystals with sharply marked surfaces. It turned out that by means of the homogeneous precipitation thorium can be separated quantitatively from foreign

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ions. There is sometimes a co-precipitation of zirconium and titanium, however, in such quantities as not to interfere with the following determination of thorium with arsenic azo (Ref 29) in the presence of tartaric acid. Also rare earths are precipitated at the same time, they do, however, not interfere with the determination of thorium. The precipitation of thorium in a homogeneous solution with acetoneoxalic acid therefore has a number of advantages: an easily filterable precipitate is obtained; there is hardly any co-precipitation of zirconium and titanium; when foreign ions are present, there is an immediate (without previous operations) and quantitative precipitation of thorium as an oxalate. A new method which is described in detail was worked out for the determination of small amounts of thorium (0.002-3.0%) in natural matter by homogeneous precipitation and following determination of thorium with arsenic azo I. This determination takes 10 to 12 hours for 10 simultaneous analyses. There are 1 figure, 3 tables, and 35 references, 9 of which are Soviet.

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SOV/75-13-5-2/24
Separation of Thorium From Titanium, Zirconium, and Other Accompanying Elements by Homogeneous Precipitation

ASSOCIATION: All-Union Institute of Mineral Raw Materials, Moscow

SUBMITTED: April 2, 1957

Card 4/4

5(2)

AUTHORS:

Zaykovskiy, F. V., Bashmakova, V. S.

SOV/75-14-1-2/22

TITLE:

Photometric Determination of the Sum of Rare Earth Elements in Ores and Rocks (Fotometricheskoye opredeleniye summy redkozemel'nykh elementov v rudakh i porodakh)

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 1, pp 50-54 (USSR)

ABSTRACT:

A photometric method for the determination of 0.01% - 5% of the sum of rare earths in ores and rocks is worked out in the present paper. This is a continuation of earlier published research works (Refs 1, 2). The determination takes place by the aid of arsen-azo. The optical density of the solutions was measured on a photo-colorimeter PEK-M by the aid of green filters ($\lambda = 570m\mu$). Equimolar quantities of the cerium and yttrium group elements possess almost the same optical density. An increase of yttrium content in the sum of rare earths causes an increase in optical density. In the presence of sulfo-salicylic acid titanium (IV) and zirconium scarcely influence the optical density, whereas thorium causes it to increase. In the presence of 50 mg sulfosalicylic acid on 25 ml solution

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Photometric Determination of the Sum of
Rare Earth Elements in Ores and Rocks

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calcium in quantities up to 6 mg does not influence the optical density of the solution, while larger quantities of Ca increase it a little. Thoron, arsen-azo and Schiff bases are suitable for separating small amounts of thorium. The corresponding thorium complexes are formed, that can be separated by the aid of active carbon. The reagent must be present in large surplus, as it is likewise adsorbed by active carbon. Most suitable is the use of the easily obtainable Schiff base from salicyl-aldehyde and o-amino arsonic acid (o-aminophenyl arsonic acid is probably meant here). Zirconium behaves in much the same way as thorium. The following method was employed for separating the rare earths from the accompanying elements: oxalate ion forming from the hydrolysis of acetone dioxalic acid yields a coarse-crystalline precipitate of oxalates of the rare earths (Ref 2). The rare earth separation according to this method is described in detail, as well as the further processing of the rare earths and the photometric determination. The solutions of the rare earths complexes with arsen-azo follow the Beer law. The determination errors amount to 20 - 5%, but also higher deviations may occur. The usual yttrium content in ores and

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rocks ($<40\%$) increases the determination results by no more than 5 - 6%. By the aid of the method elaborated as much as 8 - 10 analyses may be carried out within 8 - 10 hours. There are 2 figures, 5 tables, and 7 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy institut mineral'nogo syr'ya, Moskva
(All-Union Institute of Mineral Raw Materials, Moscow)

SUBMITTED: October 12, 1957

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SOV/75-14-4-10/30

5(2), 5(3)
AUTHOR:

Zaykovskiy, F. V.

TITLE:

Complexometric and Photometric Determination of Thorium in Minerals and Ores

PERIODICAL:

Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 4, pp 440 - 444 (USSR)

ABSTRACT:

A rapid complexometric method of the determination of great amounts of thorium, and a photometric method of the determination of small amounts of thorium in minerals and ores by using arsenazo (Refs 11-13), are proposed in the paper under review. Conditions of a complexometric determination of thorium in the presence of calcium, titanium, zirconium, and rare earths were worked out. Iron (III) thiocyanate served as an indicator for titration. Calcium and rare earths do not disturb the determination. Zirconium and titanium are also titrated by Complexon III. Thorium is separated from the majority of zirconium and titanium by the iodate-tartrate method (Ref 11). Thorium is then quantitatively freed from zirconium and titanium by precipitation with acetone dioralic acid. The results of a complexometric determination of thorium in the presence

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of calcium (Table 1), zirconium, titanium (Table 2), and rare earths (Table 3), are shown by three tables. Table 4 shows the results of a complexometric titration of thorium, after the separation of the disturbing metal ions. The course of analysis from the decomposition of the material up to the titration with Complexon III is described in the paper very accurately. For the complexometric determination of thorium in minerals (monazite, ferrothorite, etc), the solutions must be entirely free from traces of zirconium and titanium. The results of 13 determinations of thorium in various natural materials are shown in table 6. The determination of thorium, after separating the disturbing elements, is also possible photometrically, with the use of arsenazo and tartaric acid (Ref 12). This method was employed for the determination of thorium in substances of complex composition (0.005-4% of thorium, up to 60-70% of zirconium and titanium). Results of the photometric determination of thorium in synthetic mixtures after separation of the disturbing metals, are shown in table 5. Table 7 shows the results of 10 colorimetric determinations of thorium in minerals and ores. Both methods of

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determination described in the paper produce accurate and reproducible results. The determination of thorium by these two methods took 8-12 hours. There are 7 tables and 14 references, 5 of which are Soviet.

SUBMITTED: March 20, 1958

Card 3/3

announced by All-Union Institute for Mineral Resources (Vsesoyuznyy institut

ATT: Sokovt

FURTOVA, Ye.V.; SADOVA, G.F.; IVANOVA, V.N.; ZAYKOVSKIY, F.V.

Photometric determination of thorium in natural materials
with the use of arsenazo III. Zhur. anal. khim. 19 no. 1:
94-96 '64. (MIRA 17:5)

FURTOVA, Ye.V.; SADOVA, G.F.; ZAYKOVSKIY, F.V.; IVANOVA, V.N.

Photometric determination of the sum of rare earth elements in
natural substances. Zhur. anal.khim. 18 no.12:1464-1467 D
'63. (MIRA 17:4)

ZAYKOVSKIY, F.V.; IVANOVA, V.N.

Refining of the method for synthesizing arsenazo III. Zhur.anal.khim.
18 no.8:1030 Ag '63. (MIRA 16:12)

1. All-Union Scientific-Research Institute of Mineral Raw
Materials, Moscow.

SHELLER, V.R.[Schoeller, W.R.deceased]; POUELL,A.R.[Powell,A.R.];
BELOPOL'SKIY, M.P.[translator]; BYKOVA, V.S.[translator];
KNIPOVICH, Yu.N.[translator]; KRASIKOVA, V.M.[translator];
POPOV, N.P.[translator]; STOLYAROVA, I.A.[translator]; YUSOVA,
V.A.[translator]; ZAYKOVSKIY, F.V., retsenzent; SHCHERBOV, D.P.,
retsenzent; NEMANOVA, G.F., red. izd-va; IVANOVA, A.G., tekhn.red.

[The analysis of minerals and ores of the rarer elements] Analiz
mineralov i rud redkikh elementov. Pod obshchei red. I.U.N.Knipo-
vich i N.P.Popova. Moskva, Gosgeoltekhizdat, 1962. 447 p.
(MIRA 15:12)

(Mineralogy, Determinative) (Metals, Rare and minor)

ZAYKOVSKIY, F.V.; FURTOVA, Ye.V.; SADOVA, G.F.

Separation of rare earth elements from materials containing iron,
calcium, and phosphates. Zhur.anal.khim. 17 no.2:202-205
Mr-Ap 62. (MIRA 15:4)

1. All-Union Institute of Mineral Raw Materials, Moscow.
(Rare earths--Analysis) (Ores--Analysis)

S/081/62/000/003/036/090
B156/B102

AUTHOR: Zaykovskiy, F. V.

TITLE: Polymeric substances as substitutes for glass, porcelain,
and platinum

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 180, abstract
3Ye42 (Byul. nauchno-tekhn. inform. M-vo geol. i okhrany
nedr SSSR, no. 4, (21), 1959, 65-66)

TEXT: Brief particulars (chemical stability, heat resistance, etc) are
given for fluoroplast-3 (fluorethene) and fluoroplast-4 (teflon), poly-
ethylene, "chirado", irratene, polyisobutylene, and polyvinyl chloride;
the particulars show that these substances can in many cases be used as
substitutes for various types of chemical vessels made of glass,
porcelain, or Pt. [Abstracter's note: Complete translation.] ✓

Card 1/1

ZAYKOVSKIY, F.V.; SADOVA, O.F.

Photometric determination of rare earth elements with
salicylfluorone. Zhur. anal. khim. 16 no. 1:29-31 Ja-F '61.
(MIRA 14:2)

1. All-Union Institute of Mineral Raw Materials, Moscow.
(Isoxanthenone) (Rare earths—Analysis)

8/075/61/016/091/005/019
B013/B055

AUTHORS: Zaykovskiy, F. V. and Sadova, G. F.

TITLE: Photometric Determination of Rare-earth Elements Using Salicylfluorone

PERIODICAL: Zhurnal analiticheskoy khimii, 1961, Vol. 16, No. 1, pp. 29-31

TEXT: The present publication describes a method for the photometric determination of rare-earth elements using a new reagent, Salicylfluorone [9-(o-hydroxy-phenyl) 2,3,7-trihydroxy-fluorone]. V. A. Nazarenko and M. B. Shustova suggested this reagent for the photometric determination of thorium and sulfates. The pH at which the most intensive color develops with Salicylfluorone in solutions of rare-earth elements was determined by experiments with cerium and yttrium. As may be seen in Fig. 1, cerium forms a colored compound with Salicylfluorone at a higher pH than yttrium. The optical density of cerium- and yttrium Salicylfluoronate solutions was found to be the most stable at pH 6.7 - 6.8. A 20% hexamethylene-tetramine solution was used as buffer. An increase in pH leads to an undesirable increase in the optical density of the reagent.

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Photometric Determination of Rare-earth
Elements Using Salicylfluorone

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At pH 6.8, the molar extinction coefficient of solutions of the Salicylfluorone complexes of cerium, samarium and lutecium was, in the average, 17500. The quantity of Salicylfluorone required for maximum color intensity of the cerium complex is 0.75 - 1 ml of an 0.2% alcoholic solution to 25 ml of sample solution (Fig. 2). The solutions of these rare-earth complexes with Salicylfluorone obey Beer's law. The error caused by the presence of major quantities of two rare-earth elements in the ore or mineral for analysis is insignificant in photometric determination of the total rare earth elements. With Salicylfluorone, just as with Arsenazo, yttrium forms intensely colored complex solutions having practically double the optical density of the corresponding cerium complex solutions (Fig. 3). Fig. 4 represents the straight calibration curves for the cerium- and the yttrium group. At an yttrium content of only 10 - 15% of the total of rare-earth elements the slopes of the cerium- and the yttrium group calibration curves do not differ substantially. Calcium and magnesium, which interfere in the photometric determination of rare-earth elements by forming colored compounds with Salicylfluorone, may be masked with sulfosalicylic acid. The results obtained in rare-earth determinations in the presence of large amounts of calcium are very accurate and satis-

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Photometric Determination of Rare-earth
Elements Using Salicylfluorone

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factorily reproducible (Tab. 1). Iron (II) and (III), titanium (IV), thorium, zirconium and uranium also form colored complexes with Salicylfluorone the solutions of which obey Beer's law (Figs. 5 and 6). In comparison to Arsenazo I, Salicylfluorone shows much higher selectivity. Determination of the total rare-earth content in barium- and magnesium alloys does not require previous separation of the chief constituents (Table 2), the error thus incurred being within permissible limits. V. I. Kuznetsov is mentioned. There are 6 figures, 2 tables, and 3 Soviet references.

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